

REMARKS/ARGUMENTS

Claims 1, 3-18 and 26-36 are pending in this application. By this Amendment, claims 1, 10, 29 and 32 are amended. Support for the claims can be found throughout the specification, including the original claims and the drawings. Withdrawal of the rejections in view of the above amendments and the following remarks is respectfully requested.

II. Rejections Under 35 U.S.C. §103(a)

A. Irube, Murphy and Berstis

The Office Action rejects claims 1, 3, 4, 6-8, 26-28 and 33 under 35 U.S.C. §103(a) over Irube in view of Murphy, and further in view of Berstis. The rejection is respectfully traversed.

Independent claim 1 is directed to a mobile terminal, including a codec configured to perform a converting operation between analog voice data and digital voice data, a camera module connected to a camera installed within the mobile terminal, the camera module configured to perform a converting operation between analog image data and digital image data, and a direction sensor configured to detect direction data associated with an image located in a photographing direction of the camera.

The direction data is formatted in two consecutive bytes. A first byte of the two consecutive bytes is configured to provide compass heading information of the image, wherein a first bit, a second bit, a third bit and a fourth bit of the first byte, when active, are configured to indicate north, east, west and south, respectively, and wherein at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte are set active so as to denote the

compass heading information of the image. A second byte of the two consecutive bytes is configured to provide compass bearing information, the compass bearing information comprising at least an angle between directions represented by the at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte.

The mobile terminal also includes a voice/image communication apparatus configured to multiplex or demultiplex the direction data, the voice data and the image data, a display module configured to simultaneously display the image based on the image data and the direction data from the voice/image communication apparatus, wherein the direction data is displayed on the image to indicate the compass heading information and the compass bearing information associated with the image, a speaker configured to output the voice data demultiplexed by the voice/image communication apparatus, and a control unit configured to control the codec, the camera module, the voice/image communication apparatus, and the display module, wherein the control unit checks whether a direction displaying mode has been selected and controls the display module to display the image data and the direction data simultaneously as a single image when the direction displaying mode is selected.

As acknowledged in the Office Action and as set forth in detail in previous replies, Irube alone neither discloses nor suggests all of the features recited in independent claim 1, or the claimed combination of features.

The Office Action combines Irube with Murphy, asserting that it would have been obvious to modify Irube's camera direction sensor unit 28 to include features of the geographical

position/image digital recording and display system 10/300 disclosed by Murphy, and that such a modification would yield a direction sensor including the features recited in independent claim 1. However, like Irube, Murphy neither discloses nor suggests the features of the claimed direction sensor, and thus fails to overcome the deficiencies of Irube.

More specifically, Murphy discloses a system 100 in which an image 150 is captured by an optical path system (OPS) 160 and generates digital image data 170 that is processed and stored in an image recording device (IRD) 180. If the image data 150 includes a digital location L_i , the processing unit 140 provides an index number N_i that is recorded along with the digital location data L_i as the image data is captured. Murphy discloses a second embodiment of the system 300, in which Cartesian coordinates (x, y, z) are used to establish a reference point of the system 300, and attitude coordinates (such as azimuth or heading) of reference axes of the system 300, and in particular, of a focus line of the lens system 330 pointed at the reference object 320. Both the Cartesian coordinates and the attitude coordinates are related specifically to the system 300 and its components, and not the object to be photographed. Thus, Murphy neither discloses nor suggests a direction sensor configured to detect direction data associated with an image, as recited in independent claim 1.

Further, Murphy makes no specific disclosure as to how the data collected by the system is segregated, processed, stored and/or transmitted/received amongst the various components of the system. Thus, Murphy neither discloses nor suggests direction data that is formatted in two consecutive bytes, wherein a first byte of the two consecutive bytes is configured to provide

compass heading information of the image, wherein a first bit, a second bit, a third bit and a fourth bit of the first byte, when active, are configured to indicate north, east, west and south, respectively, and wherein at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte are set active so as to denote the compass heading information of the image, and wherein a second byte of the two consecutive bytes is configured to provide compass bearing information, the compass bearing information comprising at least an angle between directions represented by the at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte, as recited in independent claim 1.

By way of example, the Examiner's attention is directed to Figure 5 of the present application. In this example, if the first four bits of the first byte is '1000' and the second byte is '00000000,' the compass heading information would be 'North' and the compass bearing information (e.g., the angle) would be zero degrees. If the first four bits of the first byte is '1100' and the second byte is '00001111,' the compass heading information would be "North East," and the compass bearing information (e.g., the angle), would be 15 degrees between the North and East directions. In contrast, Murphy merely discloses that the coordinated image 430, which the Office Action asserts may correspond to the direction data, includes "a latitude, longitude, and numeric display 442 of the present location of the camera body 310." Thus, Murphy neither teaches nor suggests the claimed feature.

Further, as acknowledged in the Office Action and as set forth in detail in previous replies, like Irube and Murphy, Berstis neither discloses nor suggests a direction sensor including

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all of the features as specifically recited in independent claim 1, and thus fails to overcome the deficiencies of Irube, either alone or in combination with Murphy.

Accordingly, it is respectfully submitted that independent claim 1 is allowable over Irube, Murphy and Berstis, and thus the rejection of independent claim 1 under 35 U.S.C. §103(a) over Irube, Murphy and Berstis should be withdrawn. Dependent claims 3, 4, 6-8, 26-28 and 33 are allowable over Irube, Murphy and Berstis at least for the reasons set forth above with respect to independent claim 1, from which they depend, as well as for their added features.

B. Irube, Murphy, Berstis and Takahashi

The Office Action rejects claims 9 and 11 under 35 U.S.C. §103(a) over Irube, Murphy and Berstis in view of Takahashi. The rejection is respectfully traversed.

Dependent claims 9 and 11 are allowable over Irube, Murphy and Berstis at least for the reasons set forth above with respect to independent claims 1 and 10, from which they respectively depend, as well as for their added features. Further, Takahashi is merely cited as allegedly teaching the formation of null data sets, and thus fails to overcome the deficiencies of Irube, Murphy and Berstis. Accordingly, it is respectfully submitted that claims 9 and 11 are allowable over the applied combination, and thus the rejection of claims 9 and 11 under 35 U.S.C. §103(a) over Irube, Murphy, Berstis and Takahashi should be withdrawn.

C. Irube, Murphy, Berstis and Rudow

The Office Action rejects claims 5, 10 and 12-18 under 35 U.S.C. §103(a) over Irube, Murphy and Berstis in view of Rudow. The rejection is respectfully traversed.

Independent claim 10 is directed to a method for displaying image data and direction data of an object being photographed on a screen of a mobile terminal. The method includes receiving data at a receiving unit of the mobile terminal, the image data being associated with the object, and demultiplexing, at a demultiplexing unit of the mobile terminal, the data into image data, voice data and compass orientation direction data, wherein the direction data is formatted in two consecutive bytes, wherein a first byte of the two consecutive bytes is configured to provide compass heading information of the image, wherein a first bit, a second bit, a third bit and a fourth bit of the first byte, when active, are configured to indicate north, east, west and south, respectively, and wherein at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte are set active so as to denote the compass heading information of the image, and wherein a second byte of the two consecutive bytes is configured to provide compass bearing information, the compass bearing information comprising at least an angle between directions represented by the at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte.

The method also includes checking, at a checking unit of the mobile terminal, the demultiplexed data to determine a setting of a direction displaying mode, and displaying the image and the direction data simultaneously as a single image on the screen of the mobile if the direction displaying mode is set.

As set forth above, Irube, Murphy and Berstis, either alone or in combination, neither disclose nor suggest such features. More specifically, as set forth above, Irube, Murphy and

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Berstis, either alone or in combination, neither disclose nor suggest direction data that is formatted in two consecutive bytes, wherein the a first byte of the two consecutive bytes is configured to provide compass heading information of the image, wherein a first bit, as second bit, a third bit and a fourth bit of the first byte, when active, are configured to indicate north, east, west and south, respectively, and wherein at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte are set active so as to denote the compass heading information of the image, and wherein a second byte of the two consecutive bytes is configured to provide compass bearing information, the compass bearing information comprising at least an angle between directions represented by the at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte, as recited in independent claim 10.

Further, as acknowledged in the Office Action and set forth in detail in previous replies, Rudow fails to overcome the deficiencies of Irube, Murphy and Berstis. That is, like Irube, Murphy and Berstis, Rudow neither discloses nor suggests receiving data as specifically recited in independent claim 10, and thus fails to overcome the deficiencies of Irube, Murphy and Berstis.

Accordingly, it is respectfully submitted that independent claim 10 is allowable over the applied combination, and thus the rejection of independent claim 10 under 35 U.S.C. §103(a) over Irube, Murphy, Berstis and Rudow should be withdrawn. Dependent claims 12-18 are allowable over Irube, Murphy, Berstis and Rudow at least for the reasons set forth above with respect to independent claim 10, from which they depend, as well as for their added features.

Likewise, dependent claim 5 is allowable over Irube, Murphy and Berstis at least for the reasons set forth above with respect to independent claim 1, from which it depends, as well as for its added features. Further, as set forth above, Rudow fails to overcome the deficiencies of Irube, Murphy and Berstis. Accordingly, it is respectfully submitted that claim 5 is allowable over the applied combination, and thus the rejection of claim 5 under 35 U.S.C. §103(a) over Irube, Murphy, Berstis and Rudow should be withdrawn.

D. Irube, Murphy, Berstis and Vance

The Office Action rejects claim 32 under 35 U.S.C. §103(a) over Irube, Murphy and Berstis in view of Vance. It appears, based on the comments in the Office Action, that it was the Examiner's intention to also reject claim 36 under 35 U.S.C. §103(a) over Irube, Murphy, Berstis and Vance. The rejection is respectfully traversed.

Independent claim 32 is directed to a method of displaying direction information associated with an object being photographed by a camera phone on a screen of the camera phone. The method includes collecting packetized direction data, packetized voice data, and packetized image data in the camera phone associated with the object being photographed, wherein a first portion of the packetized direction data is provided between the packetized voice data and the packetized image data, and a second portion of the packetized direction data is provided between the packetized image data.

The method also includes demultiplexing the packetized direction data, the packetized voice data, and the packetized image data into direction data, voice data, and image data,

respectively, wherein the direction data is formatted in two consecutive bytes, wherein a first byte of the two consecutive bytes is configured to provide compass heading information of the image, wherein a first bit, a second bit, a third bit and a fourth bit of the first byte, when active, are configured to indicate north, east, west and south, respectively, and wherein at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte are set active so as to denote the compass heading information of the image, and wherein a second byte of the two consecutive bytes is configured to provide compass bearing information, the compass bearing information comprising at least an angle between directions represented by the at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte.

The method also includes displaying a representation of the object being photographed on the screen of the camera phone based on the image data, and displaying the direction data of the object being photographed on the screen of the camera phone, superimposed on the representation of the object being photographed displayed on the screen such that the image data and the direction data are displayed together as a single image.

As set forth above, Irube, Murphy and Berstis, either alone or in combination, neither disclose nor suggest the features of independent claim 32, or the claimed combination of features. Further, Vance is merely cited as allegedly teaching displaying an image on a screen of a camera phone, and thus fails to overcome the deficiencies of Irube, Murphy and Berstis. Accordingly, it is respectfully submitted that independent claim 32 is allowable over the applied combination, and thus the rejection of independent claim 32 under 35 U.S.C. §103(a) over Irube,

Murphy, Berstis and Vance should be withdrawn. Dependent claim 36 is allowable over Irube, Murphy, Berstis and Vance at least for the reasons set forth above with respect to independent claim 32, from which it depends, as well as for its added features.

E. Irube, Murphy, Berstis and Yamagishi

The Office Action rejects claims 29-31 and 35 under 35 U.S.C. §103(a) over Irube, Murphy and Berstis in view of Yamagishi. The rejection is respectfully traversed.

Independent claim 29 is directed to a mobile terminal, including a display, and a receiving unit configured to receive multiplexed data including image data and direction data associated with the image data, wherein the receiving unit receives the direction data, voice data and the image data in a packetized format. The direction data is formatted in two consecutive bytes, wherein a first byte of the two consecutive bytes is configured to provide compass heading information of the image, wherein a first bit, a second bit, a third bit and a fourth bit of the first byte, when active, are configured to indicate north, east, west and south, respectively, and wherein at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte are set active so as to denote the compass heading information of the image, and wherein a second byte of the two consecutive bytes is configured to provide compass bearing information, the compass bearing information comprising at least an angle between directions represented by the at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte.

The mobile terminal also includes a demultiplexing unit configured to demultiplex the multiplexed data into the image data and the direction data, a checking unit configured to check

whether a direction displaying mode is set, and a controller configured to control the display so as to display the image data and the direction data simultaneously as a single image when the checking unit verifies that the direction display mode is set.

As set forth above, Irube, Murphy and Berstis, either alone or in combination, neither disclose nor suggest the features of independent claim 29, or the claimed combination of features. Further, Yamagishi fails to overcome the deficiencies of Irube, Murphy and Berstis.

More specifically, as set forth in detail in previous replies, Yamagishi's disclosure is focused on the compression of audio data. Like Irube, Murphy and Berstis, Yamagishi neither discloses nor suggests a receiving unit that receives direction data formatted in two consecutive bytes, wherein a first byte of the two consecutive bytes is configured to provide compass heading information of the image, wherein a first bit, a second bit, a third bit and a fourth bit of the first byte, when active, are configured to indicate north, east, west and south, respectively, and wherein at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte are set active so as to denote the compass heading information of the image, and wherein a second byte of the two consecutive bytes is configured to provide compass bearing information, the compass bearing information comprising at least an angle between directions represented by the at most two of the first bit, the second bit, the third bit or the fourth bit of the first byte, as recited in independent claim 29.

Accordingly, it is respectfully submitted that independent claim 29 is allowable over the applied combination, and thus the rejection of independent claim 29 under 35 U.S.C. §103(a)

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over Irube, Murphy, Berstis and Yamagishi should be withdrawn. Dependent claims 30, 31 and 35 are allowable over Irube, Murphy, Berstis and Yamagishi at least for the reasons set forth above with respect to independent claim 29, from which they depend, as well as for their added features.

F. Irube, Murphy, Berstis, Rudow and Yamagishi

The Office Action rejects claim 34 under 35 U.S.C. §103(a) over Irube, Murphy and Berstis in view of Rudow, and further in view of Yamagishi. The rejection is respectfully traversed.

Dependent claim 34 is allowable over Irube, Murphy and Berstis at least for the reasons set forth above with respect to independent claim 10, from which it depends, as well as for its added features. Further, as set forth above, Rudow and Yamagishi each fail to overcome the deficiencies of Irube, Murphy and Berstis. Accordingly, it is respectfully submitted that claim 34 is allowable over the applied combination, and thus the rejection of claim 34 under 35 U.S.C. §103(a) over Irube, Murphy, Berstis, Rudow and Yamagishi should be withdrawn.

III. Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned, **Joanna K. Mason**, at the telephone number listed below.

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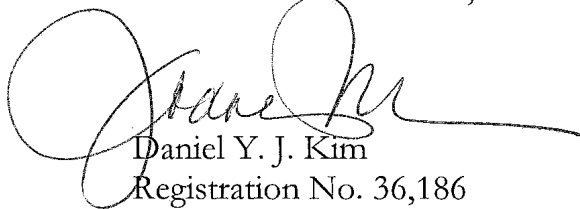
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To the extent necessary, a petition for an extension of time under 37 C.F.R. §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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